NTOMOLOGICAL
SOCIETY OF
ITISH COLUMBIA

PROCEEDINGS

OF THE

ENTOMOLOGICAL SOCIETY

—OF—

BRITISH COLUMBIA

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MARCH, 1919
NUMBER 14
SYSTEMATIC SERIES

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VICTORIA, B. C.:
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TABLE OF CONTENTS

Proceedings 3

Report of the Secretary-Treasurer 4

The **Lycæninæ** of British Columbia—E. H. Blackmore . . . 5

Notes on the **Mycetophilidæ** of British Columbia—R. S. Sherman . 12

Notes on **Oporinia Autumna** Gu—G. O. Day 12

The Tree-hoppers of British Columbia—W. Downes . . . 17

A Swarm of **Vanessa Californica** and Some Notes on a Swarm of **Plusia Californica**—J. W. Cockle 20

BRITISH COLUMBIA ENTOMOLOGICAL SOCIETY

PROCEEDINGS, 1919

The Eighteenth Annual Meeting of the British Columbia Entomological Society was held in Vancouver in the Biological Lecture Room at the University of British Columbia on March 15th, 1919.

The President, Mr. R. S. Sherman, being absent owing to illness, the chair was taken by the Vice-President for the Coast, Mr. E. H. Blackmore, and the meeting was called to order at 10 a.m.

The report of the Secretary-Treasurer, Mr. Williams Hugh, was read and adopted, after which the reading of papers was proceeded with. Thirteen papers were presented, six of which were on economic entomology, four systematic, and the remainder of general interest.

The following resolutions were proposed and carried:

Moved by E. H. Blackmore, seconded by R. C. Treherne, that in view of the fact that numbers of students are interested in entomology but not in research work, the constitution be changed to admit associate members; that the fee for said members be 50 cents per annum.

Moved by R. C. Treherne, seconded by E. H. Blackmore, that the offer of Prizes for the Best Collection of Insects be renewed to the Vancouver Exhibition, and the same offer be made to the New Westminster Exhibition Association.

Moved by R. C. Treherne, seconded by W. J. Winson, that a sum of $100.00 be set aside for the purpose of providing prizes at Fall Fairs for the best exhibits of insects, made by students attending public schools (subject to approval of Advisory Board).

Moved by W. Downes, seconded by W. J. Winson, that the Committee formed for the purpose of publishing Bulletins Nos. 8 and 10 be sustained, and the Committee be instructed to proceed with the work of publishing Bulletin No. 11, Economic Series.

The following officers were elected for the year 1919:

Hon. President—Francis Kermode, Prov. Museum, Victoria, B.C.

President—E. H. Blackmore.

Vice-President (Coast)—R. S. Sherman.

Vice-President (Interior)—J. W. Cockle.

Hon. Secretary-Treasurer—W. Downes.

Advisory Board—Messrs. W. H. Lyne, R. C. Treherne, G. O. Day, John Davidson, and L. A. Breun.

REPORT OF THE SECRETARY-TREASURER

I beg to present a report of the work of the British Columbia Entomological Society for the year 1918.

In spite of war conditions the Society added a few names to the membership roll. The parent Society credits this branch with having thirty-seven members, but our paid up membership is only twenty-five; all are actively engaged in some branch of Entomological Science.

In accordance with our usual custom, I have presented to the parent Society a report of the proceedings of the 17th Annual Meeting, held in the City of Victoria, February 23rd, 1918.

The question of Mosquito control was discussed by several governing bodies, Farmers' Institutes, and other organizations interested in the development of rural life on the Lower Mainland of British Columbia during June, 1918, the Vancouver Board of Trade being prominent in the work. The attention of the Board was drawn by this Society to the work of the Field Entomologists in the employ of the Dominion Government, and suggested the Board get in touch with Dr. Gordon Hewitt, in charge of the work. Mr. C. E. Tisdall immediately took up the question through the Board, with the Dominion Government, resulting in a visit being made by Dr. Hewitt and his British Columbia assistant in charge—our valued member, R. C. Treherne. A meeting was held in the Mission district, and a representative body of men appointed to further the work throughout the Fraser Valley. Further measures are being taken to bring the work to fruition. Mr. Tisdall commended the work of this Society.

There were no entries for the prizes offered by this Society at the Vancouver Exhibition for types of beneficial and injurious insects. If it is the pleasure of the Advisory Board to renew the offer, I feel sure eventually sufficient interest will be created to warrant the Society renewing the offer, in view of the fact that school children are now taking up the question of nature study seriously.

The Committee appointed by the Advisory Board to produce Bulletins Nos. 8 and 10, Systematic Series, completed their work, and Messrs. E. H. Blackmore, Wm. Downes and R. C. Treherne are to be congratulated on the result. The Bulletins have been distributed to all members and the several learned Societies on our mailing list, and letters of commendation have been received, and several requests have been received for copies from Entomologists in the United States.

Copies of the Bulletins were sent to all members of the Nova Scotia Entomological Society and a consignment sent to the parent Society at Guelph, and to members on the staff of the Dominion Entomologist.

WILLIAMS HUGH, Hon. Secretary.

THE LYCÆNINÆ OF BRITISH COLUMBIA

By E. H. Blackmore, Victoria, B.C.

At our annual meetings during the past five years I have given either one or two papers each year, relating to the Geometridae of this Province. During that time I have been quietly but effectively working on a new Check List of British Columbia Lepidoptera. Up to the present time I have worked out 95 per cent. of the Rhopalocera, 75 per cent. of the Noctuidæ, and 90 per cent. of the Geometridæ.

In the course of my studies I have found a great many errors which have existed for a number of years. Some of them very palpable, others which could not be avoided, as later research work by specialists has only recently given us a proper understanding of some of our species, and even now many of the names are really only tentative, as much work still remains to be done in completing the life-histories of many of our species and geographical races. Long series of adults from certain localities are necessary for purposes of comparison—certain species and forms must be bred from the egg, and larval notes taken at each successive moult, before we can really determine the status of all of our species.

The butterflies of British Columbia comprise six different families, in none of which are the misidentifications more numerous than the one I have chosen as the title of this paper.

Before taking up the different species, I think that it would be as well to give a few general characteristics of this family in its different stages.

Egg. The eggs are for the most part flattened or turban shaped, curiously and beautifully adorned with ridges and reticulations.

Larva. The caterpillars present a very unusual form, being more or less slug-shaped. The body is short and broad; the legs and pro-legs are short and small, allowing the body to be closely pressed to the object upon which it is moving; in fact, some of the species glide rather than creep. They are vegetable feeders, with the exception of one species, viz., **Feniseca tarquinius** Fabr. This species occurs in the Atlantic States and is aphidivorous, feeding on the woolly lice of the alder. One or two of the species are remarkable for having honey tubes which can be pushed out from the seventh and eighth abdominal segments and through which honey dew is extracted for the use of ants.

Chrysalis. The chrysalids are short, compressed and without angulations, attached at the caudal extremity and having a loop of silk passing round the body near its middle. They are generally closely fastened to the surface upon which pupation takes place.

Imago. All the butterflies of this family are small and are of delicate structure. The antennæ are nearly always ringed with white and a conspicuous rim of white scales encircle the eyes. There is exceeding

diversity of form in the various genera comprising this family, and they have been divided into three sub-families, viz.:

(1). The **Theclinæ** or Hair Streaks, whose wings on the upper side are generally some shade of brown and which very often have on the underside some narrow white zigzag lines, also very frequently having the hind wings adorned with one or more slender tails.

(2). The **Chrysophaninæ** or Coppers, so called as in nearly all the species, shades of coppery-red predominate.

(3). The **Lycæninæ** or Blues. This sub-family contains by far the largest number of species and is characterized by the gorgeous blue of the most varying shades on the upper side of the wings, especially in the males. It is the species of this latter sub-family that I propose to deal with in this paper.

The **Lycæninæ** of Boreal North America comprise ten different genera, six of which are represented in British Columbia. Up to date there have been described thirty-eight distinct species with thirty-five geographical races and seasonal varieties, making a total of seventy-three different forms listed as occurring in North America. In British Columbia we have nine species and nine geographical races, making a total of eighteen distinct forms, which is about one-fourth of the total number of "Blues" found in North America.

We have had two Check Lists of British Columbia Lepidoptera published, one was compiled by Mr. E. M. Anderson and published by the Provincial Museum in 1904, and the other one published by the Provincial Department of Agriculture in 1906, and compiled by some of the officers of this Society. I have never been able to find out just who assisted in this latter compilation, which was certainly an improvement on the previous one, as many of the most glaring errors and misidentifications were left out. I presume, however, that Mr. J. W. Cockle, of Kaslo, was responsible for most of the "Micros," and no doubt the late Rev. G. W. Taylor compiled the whole of the Geometridæ, while the late Capt. R. V. Harvey most likely listed the Diurnals. Looking back over these lists, I find that in this sub-family, the **Lycæninæ**, there were twenty-one forms listed in the 1904 Check List, of which one belonged to the Chrysophaninæ, and ten were misidentified; of these, seven do not occur in the Province, and in one case, one species was represented by three different names, none of which were right. In the 1906 List, there were fourteen forms recorded, of which eight were misidentifications, five of them not occurring in the Province.

I will now treat of them specifically in the sequence in which they are placed in Barnes and McDunnough's Check List, commencing with:

No. 1. **Everes amyntula** Bdv. This is commonly called the Western Tailed Blue, as it has a very minute tail at the anal angle of

each hind-wing. In both the previous B.C. Check Lists its Eastern congener **comyntas** Godt. has been listed from the Interior, but this is an error, as **comyntas** does not occur in Canada any further west than about Winnipeg. It is a debatable question, however, whether they are two distinct species or merely geographical races of each other. The mistake in our local lists probably arises from the fact that Vancouver Island specimens show a greater paucity of spotting on the under side than do those from the Okanagan district. The latter is more nearly typical and some day our Vancouver Island form may need a racial name. The most distinguishing characteristics of **comyntas** is the red lunules near the anal angle on secondaries on the upper side, which are not met with in **amyntula.**

No. 2. **Plebeius scudderi** Edw. or Scudder's Blue. The genus **Plebeius** is the largest in this sub-family and comprises thirty-one forms, of which ten are taken in British Columbia. **Scudderi** was not listed in the 1906 List but was recorded from Osoyoos in the 1904 List. This latter was an error of misidentification and was really **P. melissa** Edw., which occurs throughout that district. **Scudderi** was described from Lake Winnipeg, and the only specimens of this species taken in B.C. are from the Atlin district. They are much closer to the typical form than eastern specimens going under the same name.

No. 3. **Plebeius melissa** Edw. or the Orange-margined Blue. Through some reason or other this was omitted from the 1906 Check List. This was rather strange as it occurs right through southern B.C. from Vancouver Island to the Rocky Mountains. It is not nearly as common as many of the other "Blues," and on Vancouver Island seems rather scarce. I do not think that I have taken a dozen specimens in the ten years I have been collecting here.

No. 4. **Plebeius anna** Edw. This is probably one of the most local of our "blue" butterflies as so far I have only seen specimens from the Hope Mountains. It is recognized by its nearly white under side and the diminution of the black spots, also the orange sub-marginal band is reduced to a series of yellowish brown spots. There is a smaller form occurring at Kaslo and in the Similkameen district that may be a dwarf form of this species or a race of **scudderi.** Unfortunately the specimens I have been able to obtain so far have been too worn to make definite determination possible.

No. 5. **Plebeius aquilo** Bdv. This is commonly called the Alpine Blue on account of its only being taken at high altitudes. Atlin seems to be the only locality in B.C. from which **aquilo** is recorded. It is one of the smallest of our "blue" butterflies, and in the male is of a bluish-grey colour on the upper side.

No. 6. **Plebeius aquilo** race **rustica** Edw. This is the form which is wrongly listed in both of our Check Lists as **podarce** Feld., which

latter inhabits the Sierras of Central California. **Podarce** is also profusely spotted with black dots ringed with white on the under side, while in **rustica** the spots are reduced and on the secondaries are largely suffused with whitish. **Rustica** occurs on mountains of 6,000 to 8,000 feet altitude and has been taken on Mt. Cheam, Mt. McLean and Mt. Arrowsmith.

No. 7. **Plebeius sæpiolus** Bdv. This is really a mountain species and was described from the high mountains of California. The males of this species are of a silvery blue tinted with a violaceous sheen in certain lights, differing in colour from any other species that we have. The females are brown, heavily shot with blue, especially on the primaries. The specimens taken at Atlin are the only ones that can be considered as approaching typical **sæpiolus.**

No. 8. **Plebeius sæpiolus** form **rufescens** Bdv. This is a form occurring in northern and middle California and which extends into southern British Columbia. It is generally of larger size and has more or less obsolete reddish marginal lunules on the secondaries. It has been taken at Kaslo and Cranbrook.

No. 9. **Plebeius sæpiolus** race **nov.** This is the form which occurs commonly on Vancouver Island and goes under the name of **sæpiolus.** It differs from typical **sæpiolus** in the following particulars, which appear fairly constant: in the male the blue is much brighter on the upper side and does not show the same violaceous sheen. On the under side the ground colour is considerably lighter, being a bluish white, whereas in typical **sæpiolus** it is a brownish white; also the marginal row of black dots on the under side of the secondaries have a tendency to become obsolete. The females are entirely brown with a few blue scales basally. I have listed them in my own collection under the name of **insulanus.**

No. 10. **Plebeius icarioides** race **pembina** Edw. This is the insect that has been listed in B.C. collections under six different names, viz.: **phileros** Bdv., **fulla** Edw., **icarioides** Bdv., **ardea** Edw., **lycea** Edw., and **pheres** Bdv. **Phileros** and **fulla** are pure synonyms of **icarioides,** which latter is now restricted to the mountains of California. **Ardea** is a geographical race of **icarioides** inhabiting the Great Basin region, and **lycea** is another geographical race from the mountains of Colorado. **Pheres** is a distinct species and is only known from the San Francisco Bay region. The race **pembina** that we have in B.C. and the identification of which is correct, was described from Lake Winnipeg, and also occurs at Calgary and Yellowstone Park. The specific localities I have it from in British Columbia are the Hope Mountains, Princeton, Similkameen, Vernon, Armstrong, Kaslo and Rossland.

No. 11. **Plebeius lupini** Bdv. This is the species that is listed in our Check List as **acmon** Dbldy. & Hew. In Dr. Dyar's list (Bull. 52 U. S. N. M. 1902) **lupini** is listed as a synonym of **shasta** Edw., but they

have been proved to be two distinct species, typical **shasta** occurring throughout the Sierra Nevada range as far north as Oregon. **Lupini** does not have a wide range in this Province, the only known localities being Kaslo and the Okanagan district.

No. 12. **Philotes battoides** Behr. or Behr's Blue. This, like the preceding, is not at all a common species with us, and is taken in the same general localities as **lupini**. Apart from generic structure, they are very much alike superficially, but may be distinguished by the following differential characters; in **lupini** the males have an orange band on the outer margin of the hind wings on the upper side, while in **battoides** the orange only shows through at the anal angle. Underneath in **battoides** the ground colour is of a darker gray with the spots, especially on the primaries, being more or less quadrate. The easiest recognized point of difference, however, lies in the presence of a marginal row of metallic bluish green scales on the under side of the hind wings of **lupini** which is absent in **battoides.**

No. 13. **Phædrotes piasus** Bdv. or the Arrowhead Blue. This is better known under the name of **sagittigera** Feld., which name is now placed in the synonymy. It was so named in reference to the white sagittate or spear-head marks which show so prominently on the under side of the secondaries. Our records show at present only a limited distribution, the specific localities being Armstrong, Vernon, Penticton and Osoyoos.

No. 14. **Glaucopsyche lygdamus** race **oro** Scud. This and the following race have been going under various names in collections in this Province for a number of years, such as **antiacis, antiacis** var. **behri, lygdamus,** and **couperi.** Moreover, these names have been applied indiscriminately to each of these two forms. The race **oro,** of which I have a long series from Lillooet, Okanagan Landing, Armstrong, Penticton and Kaslo, is differentiated from **columbia** by the much paler blue on the upper side of the male. The females show a greater degree of differentiation, **oro** being of a uniform smoky brown with a few blue scales basally, while **columbia** is almost black, heavily shot with blue, giving it the appearance of being bright blue with a wide black border. The two races differ in the ground colour of the under side, **oro** being of a brownish-drab colour, while the majority of the specimens of **columbia** are of a light stone colour.

No. 15. **Glaucopsyche lygdamus** race **columbia** Skin. This form was described by Dr. H. Skinner in the Ent. News, May, 1917. The type and paratypes are from Port Columbia, Wash. Amongst other localities mentioned are Corfield, Vancouver, which, I imagine, is meant for Corfield near Duncan, on Vancouver Island. This race of **lygdamus** occurs and is fairly common on Vancouver Island about May, and is also taken in the Lower Fraser Valley, which in the main has a similar fauna to Vancouver Island.

No. 16. **Lycænopsis pseudargiolus** race **nigrescens** Fletcher. This butterfly is interesting from the fact that more varieties of it have been described than of any other butterfly on the North American continent. Today there are no fewer than fourteen recognized races and seasonal forms distributed from the Atlantic to the Pacific. In our Check Lists **nigrescens** is given as "generally distributed," but this is an error as it does not occur on Vancouver Island. It was described from specimens taken by Mr. J. W. Cockle at Kaslo, and as its name implies, it is a much darker form than the one on Vancouver Island, especially on the under side. I also have it from Lillooet, Penticton and Rossland.

No. 17. **Lycænopsis pseudargiolus** race **nigrescens** form **quesnelli** Cockle. This form was tentatively named by Mr. Cockle, which name has been accepted for the present and is listed in Barnes and McDunnough's Check List (1917). The only specimens known are two worn ones taken at Bala Lake near Quesnel.

No. 18. **Lycænopsis pseudargiolus** race **echo** Edw. This form is very common on Vancouver Island in the early Spring, and has been listed in all local collections under the name of **nigrescens. Echo** was described from California and is very common in its nimotypical locality.

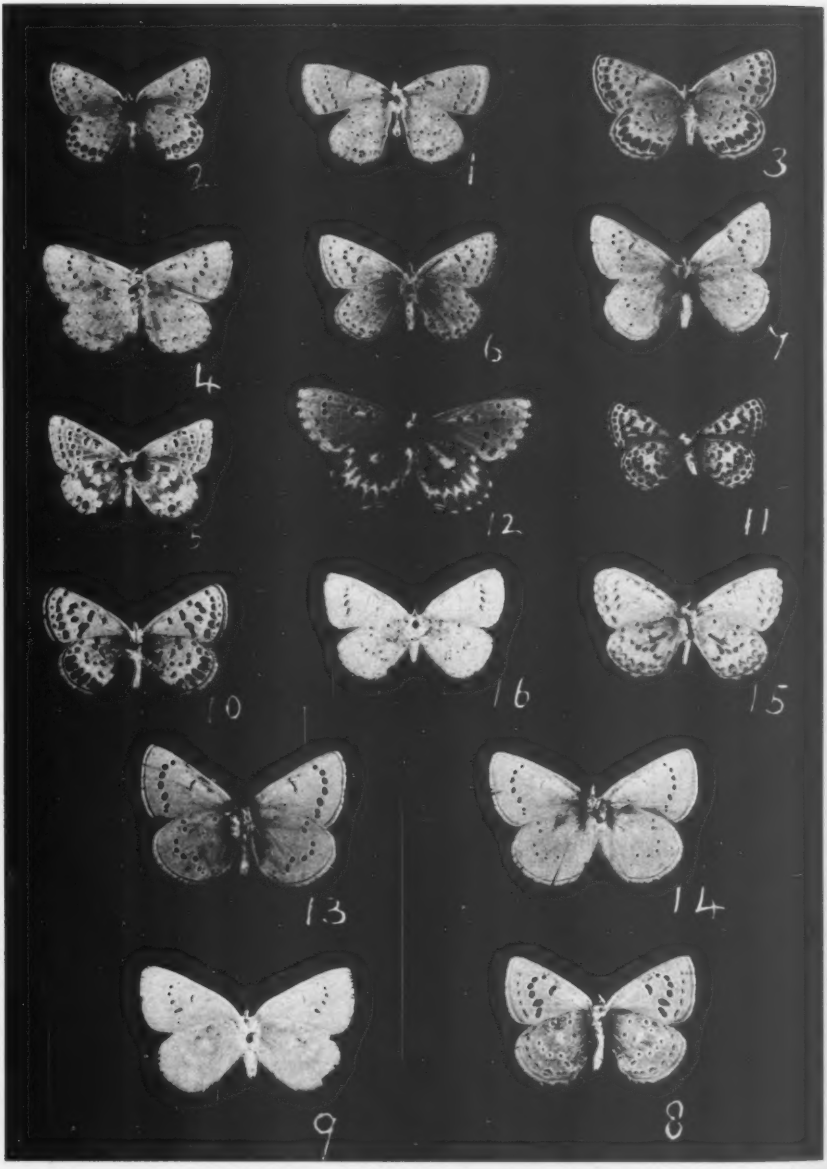
AUTHOR'S NOTE (October, 1920):

Nos. 5 and 6. **Plebeius aquilo** and its race **rustica.** Since the above paper was written I have received additional material in this group from Lillooet and Chilcotin. I have given this species considerable study and have come to the conclusion that all of the forms from the various localities in British Columbia are conspecific. I have compared them with **aquilo** from Labrador and with **rustica** from Colorado, and although they bear certain characters of each, they do not exactly correspond in all particulars with either. They are probably nearer to the race **rustica** than to **aquilo,** but until I can procure further material, especially females, it will be best to call them **rustica** for the present.

In the Can. Ent., April, 1919, p. 92, Drs. Barnes and MacDunnough have described a new race of **Plebeius icarioides** under the name of **blackmorei,** from a long series of both sexes taken by the writer at Goldstream in May, 1918. Excellent figures of the male, female, and the under side of this new race, with notes thereon, are contained in the Annual Report of the Provincial Museum for 1919.

As there seems considerable difficulty amongst collectors in identifying their specimens in this sub-family, I have prepared a plate illustrating the under sides of sixteen forms occurring in British Columbia. It is to be hoped that this will prove to be of some benefit to our B.C. collectors in enabling them to determine their "Blues" more readily than they have been able to do in the past.

PLATE I.



EXPLANATION OF PLATE

Fig. 1. Under side of **Everes amyntula** Bdv.
Fig. 2. " " **Plebeius scudderi** Edw.
Fig. 3. " " " **melissa** Edw.
Fig. 4. " " " **anna** Edw.
Fig. 5. " " " **aquilo rustica** Edw.
Fig. 6. " " " **sæpiolus** Bdv.
Fig. 7. " " " " **insulanus** Blackm.
Fig. 8. " " " **icarioides pembina** Edw.
Fig. 9. " " " " **blackmorei** B. & McD.
Fig. 10. " " " **lupini** Bdv.
Fig. 11. " " **Philotes battoides** Behr.
Fig. 12. " " **Phædrotes piasus** Bdv.
Fig. 13. " " **Glaucopsyche lygdamus oro** Scud.
Fig. 14. " " " " **columbia** Skin.
Fig. 15. " " **Lycænopsis pseudargiolus nigrescens** Fletch.
Fig. 16. " " " " **echo** Edw.

NOTES ON THE MYCETOPHILIDÆ OF BRITISH COLUMBIA

By R. S. Sherman.

From a common Agaricus, or gill-bearing fungus, gathered on Nov. 4th, there emerged on Nov. 24th over fifty specimens of **Mycetophila monochæta.** From similar fungi gathered on Nov. 18th there emerged on Dec. 12th, a numerous brood of **Bolitophila cinerea** Meig. From fungi gathered on Dec. 16th, there emerged on Jan. 3rd to Jan. 5th, a large brood of **Exechias.** From another fungus gathered on the same date I obtained a few specimens of **Rhymosia-** sp., on Jan. 17th.

The pupal stage of the **Exechias** emerging on Jan. 3rd lasted fifteen days. The larvae of these **Exechias** excavated a cell about two inches below the surface and after weaving a delicate white cocoon soon assumed the pupal form, which could be seen quite plainly through the gauzy covering. It was evident that the mature fly made good use of the strong setae, spines, and spurs, with which its legs are armed, in forcing an outlet to the surface of the soil.

I herewith submit a tentative list of the species of **Mycetophilidæ** found in the Province of British Columbia:

1. **Bolitophila hybrida** Meig. Selkirk Mts.; Stanley Park.
2. **Bolitophila disjuncta** Lw. Vancouver; Caulfields.
3. **Bolitophila montana** Coq. Vancouver.
4. **Bolitophila cinerea** Meig. Vancouver.
5. **Mycetobia divergens** Walk. Victoria.
6. **Palaeoplatyura** sp. Savary Island.
7. **Ditomyia** sp. Savary Island.
8. **Symmerus annulata** Meig. Savary Island.
9. **Diadocidia borealis** Coq. Commonly distributed.
10. **Diadocidia ferruginosa** Meig. Vancouver.
11. **Ceroplatus erminalis** Coq. Kaslo; Royal Oak.
12. **Apemon nigriventris** Jn. Prairie Hill, alt. 5,800 feet.
13. **Platyura mendica** Lw. Savary Island.
14. **Platyura mendosa** Lw. Savary Island.
15. **Platyura moerens** Jn. Savary Island.
16. **Platyura fascipennis** var. **sagax** Jn. Savary Island.
17. **Platyura intermedia sp. nov.** Savary Island.
18. **Macrocera clara** Lw. Savary Island.
19. **Macrocera sp. nov.** Savary Island; Caulfields.
20. **Macrocera sp. nov.** Savary Island.
21. **Monoclona elegantula** Jn. Capilano.
22. **Monoclona furcata** Jn.
23. **Monoclona sp. nov.** Capilano.
24. **Tetragoneura pimpla** Coq. Vancouver; Savary Island.
25. **Tetragoneura arcuata sp. nov.** Caulfields; Stanley Park.
26. **Tetragoneura marceda sp. nov.** Savary Island.

27. **Tetragoneura fallax sp. nov.** Commonly distributed.
28. **Tetragoneura atra sp. nov.** Vancouver; Seymour Creek.
29. **Paratinia vancouverensis sp. nov.** Vancouver.
30. **Polylepta obediens** Jn. Savary Island.
31. **Polylepta sp. nov.**
32. **Dziedzickia fuscipennis** Coq. Kaslo.
33. **Dziedzickia columbiana sp. nov.** Vancouver.
34. **Dziedzickia johannseni sp. nov.** Savary Island.
35. **Dziedzickia rutila sp. nov.** Vancouver.
36. **Dziedzickia occidentalis sp. nov.** Savary Island.
37. **Dziedzickia vernalis sp. nov.** Vancouver.
38. **Mycomya maxima** Johan. Vancouver.
39. **Mycomya mendax** Johan. Selkirk Mts.; Vancouver.
40. **Mycomya brevitittata** Coq. "Originally recorded from B.C."—
41. **Mycomya marginalis** Jn. Selkirk Mts. [Johan.
42. **Mycomya imitans** Jn. Selkirk Mts.
43. **Mycomya biseriata** Lw. Selkirk Mts.
44. **Mycomya incompta** Jn. Selkirk Mts.
45. **Mycomya simplex** Coq. Vancouver.
46. **Mycomya calcarata** Coq. Savary Island.
47. **Mycomya** (near) **littoralis** Say. Lynn Creek.
48. **Acnemia psylla** Lw. Vancouver.
49. **Rondaniella abbreviata** Lw. Selkirk Mts.
50. **Neuratelia coxalis** Coq. Savary Island.
51. **Neuratelia nemoralis** Meig. Selkirk Mts.
52. **Neuratelia johannseni sp. nov.** Agassiz.
53. **Boletina imitator** Jn. Vancouver.
54. **Boletina melancholica** Jn. Vancouver.
55. **Boletina notescens** Jn. Lynn Creek.
56. **Boletina inops** Coq. Vancouver.
57. **Boletina sobria** Jn. Vancouver.
58. **Boletina auricoma sp. nov.** Savary Island; Stanley Park.
59. **Boletina tenebrosa sp. nov.** Savary Island; Vancouver.
60. **Boletina noctivaga sp. nov.** Savary Island.
61. **Boletina majuscula sp. nov.** Caulfields.
62. **Leia sublunata** Lw. "B.C."
63. **Leia winthemi** Leh. Agassiz.
64. **Leia cernua sp. nov.** Agassiz.
65. **Phthinia curta** Jn. Vancouver.
66. **Phthinia tanypus** Lw. Vancouver.
67. **Phthinia seorsa sp. nov.** Vancouver.
68. **Phthinia vittata sp. nov.** Vancouver.
69. **Coelosia gracilis** Jn. Agassiz.
70. **Coelosia univittata sp. nov.** Savary Island.

71. **Megophthalmidia occidentalis** Jn. Savary Island.
72. **Docosia nigella** (?) Jn. Vancouver.
73. **Anatella silvestris** Jn. Vancouver.
74. **Trichonta dawsoni** (fossil).
75. **Trichonta nigrina sp. nov.** Caulfields.
76. **Cordyla manca** Jn. Vancouver.
77. **Cordyla neglecta** Jn. Vancouver.
78. **Cordyla scita** Jn.
79. **Cordyla sp.** (?)
80. **Rhymosia sp.** b Jn. Selkirk Mts.
81. **Rhymosia filipes** Lw. Vancouver.
82. **Rhymosia imitator** Jn. Vancouver.
83. **Rhymosia pectinata sp. nov.** Savary Island.
84. **Rhymosia brevicornis sp. nov.** Vancouver.
85. **Rhymosia prolixa sp. nov.** Vancouver.
86. **Rhymosia faceta sp. nov.** Savary Island.
87. **Rhymosia seminigra sp. nov.** Vancouver.
88. **Allodia falcata** Jn. Stanley Park.
89. **Allodia bella** Jn. Selkirk Mts.
90. **Allodia auratilis sp. nov.** Savary Island.
91. **Allodia protenta sp. nov.** Vancouver.
92. **Allodia maxima sp. nov.** Vancouver.
93. **Allodia quadrangula sp. nov.** Savary Island.
94. **Phronia incerta** Adams. Selkirk Mts.
95. **Phronia venusta** Jn. Caulfields.
96. **Phronia insulsa** Jn. Savary Island.
97. **Telmaphilus nebulosa** Jn. Stanley Park.
98. **Telmaphilus tenebrosus** Coq. Savary Island.
99. **Telmaphilus sp. nov.**
100. **Exechia perspicua** Jn. Vancouver.
101. **Exechia palmata** Jn. Selkirk Mts.; Vancouver.
102. **Exechia umbratica** Ald. Vancouver.
103. **Exechia nugax** Jn. Vancouver.
104. **Exechia bellula** Jn. Vancouver.
105. **Dynatosoma fulvida** Coq. Selkirk Mts.; Vancouver; Wellington.
106. **Dynatosoma nigrina** Jn. Vancouver Island.
107. **Dynatosoma placida** Jn. Capilano.
108. **Mycothera impellans** Jn. Vancouver.
109. **Mycothera paula** Lw. Columbia River, B.C.; Common on the
110. **Mycothera fenestrata** Coq. Generally distributed. [Coast.
111. **Mycothera sp.** Caulfields.
112. **Mycetophila mutica** Lw. Selkirk Mts.; Vancouver.
113. **Mycetophila vitrea** Coq. "B.C."
114. **Mycetophila scalaris** Lw. Selkirk Mts.

115. **Mycetophila pectita** Jn. Selkirk Mts.
116. **Mycetophila edentula** Jn. Rogers' Pass; Vancouver; Agassiz.
117. **Mycetophila monochaeta** Lw. Vancouver.
118. **Mycetophila lassata** Jn. Vancouver.
119. **Mycetophila imitator** Jn. Vancouver.
120. **Mycetophila extenta** Jn. Vancouver.
121. **Mycetophila punctata** Jn. Vancouver; Victoria.
122. **Mycetophila jugata** Jn. Vancouver.
123. **Mycetophila falcata** Jn. Savary Island; Vancouver.
124. **Mycetophila fatua** Jn. Caulfields; Stanley Park.
125. **Mycetophila foecunda** Jn. Seymour Creek.
126. **Mycetophila bipunctata** Lw. Vancouver.
127. **Mycetophila** (near) **edura** Jn. Caulfields.
128. **Mycetophila socia** Jn. (var.) Lynn Creek.
129. **Mycetophila perlonga** Jn. Caulfields.
130. **Mycetophila polita** Lw. Caulfields.
131. **Mycetophila exusta** Jn. Vancouver.
132. **Sceptonia nigra** Meig. Selkirk Mts.; Rogers' Pass; Caulfields.
133. **Sciara pauciseta** Felt. Grand Forks.
134. **Sciara tridentata** Rub. Lowe Inlet.
135. **Sciara prolifica** Felt. Selkirk Mts.
136. **Sciara munda** Jn. Vancouver; Vancouver Island.
137. **Sciara acuta** Jn. Vancouver.
138. **Manota sp.** Savary Island; Stanley Park.
139. **Opisthlolaba ocellata** Jn. Caulfields; Lynn Creek.

NOTES ON OPORINIA AUTUMNATA Gn.

By G. O. Day

Any information that serves to identify or determine some of our B.C. Lepidoptera that are doubtfully named, is so much to the good; therefore the following notes on the above named species may be of interest.

I have long been of the opinion that the moth recorded in our Check List of B.C. Lepidoptera as **Asthena dilutata** Denis & Schiff, was not that species. (I may mention in passing that in Barnes & McDunnough's recently published Check List the family name is changed to **Oporinia** Hbn., which name we may now accept.) In order to find out if my doubts were correct, I obtained in 1913 some ova from the only representative of the genus **Oporinia** I have taken in this district (Duncan) and I bred the insect through to the perfect state in 1914. I found that the larvae differed sufficiently from those of genuine **dilutata,** as figured in Buckler's Larvae of British Lepidoptera, to justify my suspicions. Last August I received a letter from Dr. Harrison, of the Zoological Department of the University of Durham, England, asking me if I could let him have ova of **O. dilutata** from British Columbia for the purpose of experimenting in the crossing of that species with the closely allied species **O. autumnata.** Fortunately, I was able to supply him with ova of the **Oporinia** occurring here, and in his letter of acknowledgment he wrote as follows: "The eggs are those of **O. autumnata,** not **dilutata. Dilutata** has a small egg, polished and markingless, about one-third the size of these. **Autumnata** differs in nowise from yours."

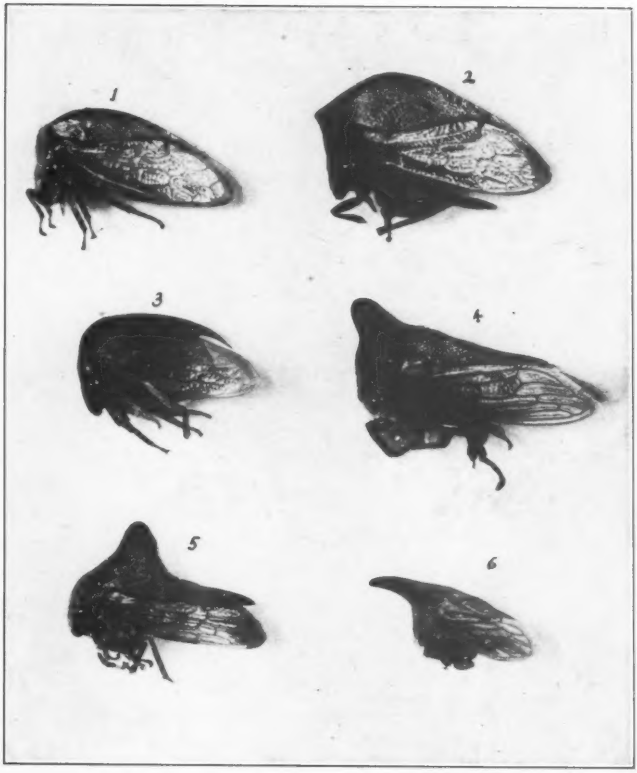
When I was in England I was well acquainted with both **dilutata** and **autumnata** in the perfect state, and the two were accepted by all entomologists there as distinct species.

As Drs. Barnes & McDunnough in their Check List make **autumnata** only a form of **O. dilutata** and not a separate species, I wrote to the authors and enclosed Dr. Harrison's letter, calling their attention to the information contained therein. In reply Dr. McDunnough stated that the matter had been cleared up in 1917, by Mr. Swett, who gave the new name **autumnata** var. **henshawi** to our North American form.

It is satisfactory to feel that progress is being made in the identification of our B.C. insects.

I assume from Barnes & McDunnough's list that **O. dilutata** also is found in North America, but I have failed to find the species in the Cowichan district so far.

PLATE II.



EXPLANATION OF PLATE II.

(All Figures × 4)

Fig. 1. Ceresa basalis Walk., female.
Fig. 2. Ceresa bubalus Fab., female (ovipositor protruding).
Fig. 3. Stictocephala pacifica Van D., female.
Fig. 4. Platycotis quadrivittata Say., female.
Fig. 5. Glossonotus univittatus Harr., female.
Fig. 6. Campylenchia latipes Say., female.

THE TREE-HOPPERS OF BRITISH COLUMBIA

By W. Downes

The present account embodies the results of collections made by the writer during the years 1917 and 1918, principally in the neighbourhood of Victoria and a few specimens taken in the Fall of 1918 at Vernon, but as the area covered has been so restricted, this report cannot be considered as other than a preliminary outline, but it may serve as an indication of the extent of our Membracid fauna.

The number of species taken has been disappointingly few, only five having so far been found, but possibly this number may be added to when opportunity occurs to collect further afield, particularly along the southern boundary of the Province and especially in that region south of Okanagan Lake, where a streak of the Upper Austral Zone crosses the International boundary.

The Pacific Coast is, compared with the East, not by any means rich in Membracid species, only thirty-five being recorded from California, while in New York State seventy-six species are recorded and over sixty in New Jersey. In an account of the Membracidae of Nova Scotia by Prof. Brittain (N.S. Ent. Soc. Proc. No. 3) thirteen species are described, while Ontario is credited in Van Duzee's recent list with thirty-six.

The Membracidae are primarily a tropical and sub-tropical family and their stronghold is South America, where they are abundantly represented. Perhaps their scarcity on the Pacific Slope may be explained in part by the presence of geographical barriers in ancient times. The Palearctic region is very poorly represented, there being only two or three genera on the entire continent of Europe. Only two species are known in Great Britain and two in Russia. The further north the fewer the species, consequently it will be in the southern portion of our territory that we must look for fresh accessions to our list.

Ceresa basalis, Walk. This is the commonest Membracid found in British Columbia. The usual colour is pale green, fading to a greenish yellow when dried, or occasionally live adults are seen which are yellow. Length of males 7 m.m. Length of females 8 m.m. The pronotum is furnished with two short lateral horns which are usually tipped with red. The pronotum is densely punctate and bears numerous short hairs. The ventral surface in the males is nearly always black, the black colour often extending to the head and dorsal surface, so that the whole insect has a dingy appearance, but in the females the black colour is confined to the ventral surface of the abdomen, and many females are entirely free from black. Usually this species has been swept from willow bushes, but I have found it also on Goldenrod and several herbaceous plants.

Stictocephala pacifica, Van. D. This species is fairly common at Victoria, but I have not yet taken it in the Interior. It is about equal

in size with the foregoing and may easily be distinguished by the absence of the pronotal horns. The colour is also a more decided green. The males are smaller than the females and the ventral surface of the abdomen of the male is black, the females being entirely green. The most decided specific character is the outline of the terminal abdominal segment, which is deeply notched to receive the styles of the ovipositor. So far I have only taken **Stictocephala pacifica** on willow.

Platycotis quadrivittata (Say.) is common on oaks in the neighbourhood of Victoria. In general appearance the species is greenish brown above, dotted with red. The pronotum is densely punctate, smooth, and bears a short pronotal horn projecting slightly forward and two short lateral horns. The length of the pronotal horn varies greatly and both it and the lateral horns may be absent. The amount of red on the pronotum and costal margins of the tegmina varies greatly and is more usually present in the females than the males, which are darker and frequently blotched with black. A beautiful form which is occasionally taken has the ground colour a dull greenish white with the edges of the pronotum bordered with red, and two parallel red stripes one on each side of the median carina. It would seem that the name quadrivittata would be more applicable to this variety than the commoner type. Length 10 m.m. Adults of this species have been taken early in the Spring, so it is probable that it winters over in the adult form.

Glossonotus univittatus, Harr. Very few of this species have been taken and it does not appear to be anywhere very common. It has been only taken on willow **(Salix scouleriana).** Two or three specimens have been obtained near Victoria and a dead one was taken from a spider's web at Vancouver. It will easily be known by the pronotum being raised into a prominent hump and by the broad white stripe extending nearly to the tip of the pronotum. Nothing is known of the life-history. Length 9.5 m.m.

Campylenchia latipes, Say. One specimen only has been taken. This one was swept from willow at Swan Lake near Vernon. It is usually a grass-inhabiting species and common in the east on alfalfa and sweet clover, and its occurrence on willow may have been accidental, as it was on the edge of an alfalfa field. It will easily be recognized by the forward-projecting pronotal horn which is deeply keeled and bears two lateral ridges. Colour cinnamon brown, pronotum densely punctate and hairy. Length 6 m.m.

ADDITIONAL NOTES (Dec., 1920):

Since the above was written I have been able to record another species for British Columbia. This is **Ceresa bubalus** Fabr. It was taken at Agassiz on Aug. 29th, 1920. Its occurrence was not unexpected, since it is a common species in most parts of North America and has

been recorded from California, and its range might be expected to extend northwards. It is easily distinguished from **Ceresa basalis,** which it resembles in form, by its larger size and longer lateral horns. Its length is 9 m.m., colour bright green, fading in cabinet specimens to dull yellow.

Ceresa bubalus is of considerable economic importance where it is abundant, on account of the injuries done to young orchard trees and nursery stock by the female when ovipositing. The eggs are inserted in a slit in the bark and the scars thus caused enlarge with the growth of the tree, forming dead areas of bark which are a starting point for fungous growths and boring insects. **Ceresa basalis** oviposits in a similar way but the wounds heal over and are not so serious.

Glossonotus univittatus. Further examples of this species have been taken, two by me at Enderby on Aug. 22nd, and one by Mr. Buckell at Chilcotin on July 23rd. The Okanagan specimens were taken on willow, and I found it, as elsewhere, very scarce.

Stictocephala pacifica. A few specimens have been received from Vernon (July 29th, M. H. R.), thus extending the known range of this species to the Interior of British Columbia.

Campylenchia latipes. On Aug. 16th I took a number of these at Penticton on Goldenrod. They were in little parties of four or five and were attended by ants who were evidently herding them, as they do with other species of Membracidae elsewhere. So long as the ants were undisturbed the tree-hoppers made no attempt to move away, but whenever the ants were driven off the tree-hoppers seemed to take fright and decamped in all directions.

CORRECTIONS TO PROCEEDINGS No. 12

Page 13, line 34, for **astulatus** read **ustulatus.**
Page 15, line 19, for **Eucanthus** read **Evacanthus.**
Page 16, line 13, for **commisuralis** read **commissuralis.**

A SWARM OF VANESSA CALIFORNICA AND SOME NOTES ON A SWARM OF PLUSIA CALIFORNICA

By J. W. Cockle

Commencing on June 17th of this year a very large number of **V. californica** were to be seen on the lower slopes of the mountains round Kootenay Lake. It is usual to see a few hibernated specimens of this butterfly in the early spring, just as soon as the weather is warm enough to permit them to emerge from their winter quarters, but what amounted to a large swarm in the middle of June was most unusual. All of the specimens were very fresh and looked as if they might be freshly emerged, but my supposition was that they were part of a brood that had hibernated at a very high altitude and consequently did not leave their winter quarters until the snows had melted in the neighbourhood in which they had hibernated. This supposition is backed up by the fact that the mountains round Kootenay Lake rise to an altitude of over 9,000 feet and their only known food plant, **Ceanothus sanguineus,** grows most abundantly up to near the summits.

About the first week in August the new brood began to make their appearance and in a few days they were to be seen in countless thousands, not alone round Kootenay Lake but eastward across the mountain range in the valley of the Columbia and westward into the valley of the Arrow Lakes district. The emergence seemed to reach its zenith about the 15th of August, at which time they were everywhere; along the roads in the afternoon they were to be seen settled on the roadbed in sufficient numbers to almost obscure the ground.

I kept a good lookout for any aberrations but none were seen, whereas in the swarm that was here in the summer of 1890 several dimorphic specimens were captured by a collector here; these are, I believe, now in the Cambridge Museum in England.

The time of their arrival and subsequent emergence shows that their entire larval and pupal stages were completed in five weeks; this is remarkable as those that occur here ordinarily will take from the beginning of May until August to complete their life-history.

I have also to record a swarm of **Plusia californica** which emerged at the end of September. They were much in evidence in the afternoon and early evening flying over the clover, as many as twenty or thirty might be taken on the clover blossoms within a space of a square yard. Though they were so plentiful in the fields, they were very scarce at light, which is quite the reverse of their usual habit. It was curious that **P. californica** was so numerous, when the scarcity of all other varieties of Plusias was so marked, the only other species of this genus that occurred sparingly here last summer was **viridisignata,** all other members of this family were conspicuous by their absence, not a single specimen was taken here by either of the collectors.

As **P. californica** when numerous has proved a bad pest amongst the alfalfa fields, it remains to be seen if they will pass the winter in sufficient numbers to make them a bad pest in the coming summer. Regarding the economic value of records of swarms of insects, it may be well to conclude this article with a few notes. **V. californica** feeds only on the **Ceanothus** which, when attacked by a swarm, is completely defoliated, areas of many acres have been observed which had been entirely stripped of every vestige of foliage, and it is not unusual to find the pupæ suspended from the leafless branches. I have seen instances where the pupæ hung in rows (with an intervening space in some cases not exceeding one inch) right along the branches. The fact that **V. californica** only feeds on the **Ceanothus** forms an exception to the many insects which favour this shrub as a food plant, most of the other insects which feed on it will attack the foliage of the apple trees which have superseded the wild brush on the cleared land.

Another fact that was observed after the swarm of 1890 was the almost entire absence of the insect for several years following. This year swarms of them are hibernating. During January I had occasion to remove some lumber which had been piled in the roof of the barn and found thousands of them packed in between the stacks of boards; it would have been easy to fill a quart measure with them.

As regards **P. californica** I have reason to believe that all the **Plusias** that occur in this section of British Columbia are single brooded. **Californica** hibernates and in the spring of 1914 was greatly in evidence flying round the fruit tree bloom, to which I believe they acted as good pollinators.

I would like to refer to a pamphlet issued by the Entomological Department, being a re-print of an article by Mr. Arthur Gibson which was published in the Agricultural Gazette, entitled "The Alfalfa Looper," in which the statement is made that there are probably two distinct broods each year; this statement I believe to be incorrect. It is a fact that freshly emerged specimens may be found during July, but it is also very probable that some specimens may have been confused with **Pseudogamma.** These two species are so much alike that a correct identification is sometimes difficult.

Pseudogamma flies during July, August and September and passes the winter in the larval stage. I have never seen a hibernated specimen of it. I have records of **Californica** from July to the following June, but all those taken in the spring are hibernated; the records of **Pseudogamma** run from July to October, with no record of any hibernated specimens in the following spring.

I have no records of the capture of hibernated specimens of any of the fifteen species of **Plusia** that occur here, except as stated in the case of **Californica.**